

The schools of tempera-painting were to the Flemish artists what the *Feria*, or market of Seville, was to Murillo and his contemporaries. For (though the latter uniformly painted in oil) such demands had the effect of promoting facility of execution and a large style of imitation, the influence of which may be traced in the more complete works of the respective schools, different as their tendency was in other respects. The rage for temporary decorations in the cities of Flanders, to do honour to distinguished individuals, had the additional effect of promoting a taste for allegory. The most extravagant combinations and allusions were excused in ephemeral productions, till by degrees the public were accustomed to such inventions; and the greatest artists, aware of the value of such materials as conducing to picturesque effect, ventured to introduce them in more permanent works, and recommended them by their talents.

The vehicles employed in tempera were sufficient to bind it when the colours were used in moderate thickness, but the danger of cracking prevented the application in much body. When, therefore, pictures in tempera appear to be executed with unusual substance, it may be suspected that other ingredients were added so as to give it sufficient tenacity, by which means it held a middle place between water-colour and oil-painting; the rapid drying which precluded the possibility of giving the work the requisite softness and completeness, was at the same time prevented. The colours prepared for painting in this method may be mixed either with water or oil.

There is every appearance in some unfinished pictures of the Venetian and other schools of the north of Italy that the tempera adopted by them was of this description, and it is also apparent, from such pictures, that the method was sometimes employed as a preparation for oil-painting. Various modes of this kind may be considered and described in an inquiry into the early process of oil-painting; but lest too much importance should be attached to such preparations in tempera, it may be remembered that the practice of Rubens, Vandyke, and Rembrandt, supposes no such system.

The tempera-painting of the ancients (although from passages in their writers evidently a distinct art from encaustic) appears to have been protected by a coat of wax, and thus may not be easily distinguished, in actual remains, from encaustic painting. But it is probable that in every case where a finished tempera painting was thus varnished, the surface was first covered with some glutinous application before the liquid wax was added. Without this precaution, the mutual relation or keeping of the tints would be in danger of being altered. Other methods of protecting tempera, so as to render it washable, have been discovered by modern chemists.

The ancient Egyptian paintings were executed on a stucco consolidated with an animal gluten, probably the serous portion of blood. On this was a thin coat of wax, and on this again the paintings were executed with the same vehicle of serum. The stucco of the Greeks was sometimes consolidated with thick milk; their tempera vehicle appears to have been gum-tragacanth (*Sarcocolla*), size, yolk and white of egg, &c.

In encaustic painting, wax was an ingredient from first to last. The precise process of this art among the ancients has been the subject of much controversy, but the actual remains of antique painting at Pompeii and Herculaneum, as well as numerous allusions in the writings of the ancients, prove that it was common among the Greeks and Romans. It was also occasionally employed during the middle ages, and it is even asserted that it is still practised, however rudely, by Greek painters of the present day.

The inquiries and experiments hitherto undertaken, seem to prove that two methods are practicable. In one, the wax is dissolved by a lixivium, and is then worked with water. In the other, it is mixed with a resin dissolved in spirit. In the first process a final coat of wax is essential to protect the painting. In the other method this varnish may or may not be used.

In the ancient encaustic, whatever were the ingredients, heat (as the term encaustic implies) was employed either during or after the process of painting. In the attempted revival

of this art, in the last century, the application of heat was also considered indispensable. The method practised was to apply a *cauterium*—a portable furnace, hot iron, or any similar instrument, so as gently to melt the coating of wax spread over the finished painting. The heat was sufficient at the same time to effect the wax incorporated with the colours, and thus a union was produced throughout the mass. If afterwards rubbed with a cloth the surface acquired a slight polish.

In the other process, which, in its improved state, is more modern, heat is considered unnecessary, and the art is therefore properly called wax-painting, not encaustic-painting. The application of heat might still serve to consolidate and give transparency to an external coat of pure wax, but the presence of resinous substances in the vehicle, and with the colours, is supposed to render such application superfluous as regards the consolidation of the painting itself.

The solution of wax by means of alkaline lixivium was probably not unknown to the ancients. This was the method of Bachelier, Walter, Requeno, and others, but the specimens executed according to their system have not been considered successful as regards durability.\* The following communication from Mr. King, of Bristol, may be considered an improvement on the process in question.

"The conversion of wax into a substance soluble in water is effected by the vegetable alkali, known by the name of potash, being combined with tartaric acid. This is the *Sale di Tartaro* of the Italians, and is sold by all chemists and druggists in this country under the proper name tartate of potash, and more commonly salt of tartar or soluble tartar. When the acid predominates, it is called super-tartate of potash, or cream of tartar. This is the best substance to be employed in my process, and in the following manner:—An indefinite quantity, say half a pound, of this salt being placed upon an iron shovel and exposed to the action of fire, becomes a black substance resembling coal, a sort of slug. It is to be thrown while hot into a vessel holding about six quarts of pure water, that is, filtered rain-water or distilled water. Shortly after it is quenched, it is to be ascertained that the fluid is saturated with the alkali by its taste, or better, by its effect upon the colour of test paper.

"No quantity of water can hold more alkali in solution than that which is sufficient to saturate the water at the same temperature. The undissolved portion is separated by filtering, and the residue will serve to saturate another quantity of water. By filtering, the saturated fluid is sufficiently freed from the dark colour which was caused by the burnt alkali. This saturated fluid is called a lixivium, and in it the purified wax is to be boiled until it is converted into soluble soap, and wholly dissolved so as not to separate from the fluid when cooled. According to the proportion of the quantity of wax to that of the water, the fluid will appear like milk when the proportion of wax is small, like cream or butter when it is greater; and even of the consistency of soft cheese when the wax is in excess. The consistency of cream is best suited for grinding the medium with more or less finely pulverized dry pigment body colours, such as ochres, raw or burnt terra sienna, raw and burnt umber, Cobalt, smalt, light red, red and white and black chalk, stone coal or anthracite, &c., answer best for dead colouring, and become brighter in the subsequent fusion and fixing by the use of the cauterium.

"Metallic colours, which are artificial oxides of metals, like vermilion or cinnabar, which is a sulphuret of mercury, red and white lead, chrome yellow, and others, are differently affected in the burning in, and the changes which they undergo are to be ascertained by previous trials. The latter class of pigments are more adapted to the finishing of pictures. Pigments of a vegetable nature, such as lakes, madders, &c. are altogether to be avoided, or very sparingly used, and not at all in masses. The conjunction of the medium (soluble wax), by grinding it with every pigment, is best performed in stone or earthenware (Wedgwood's) mortars and with pestles of the same materials,

and the colours thus prepared are to be kept for immediate use in glasses or common gallipots. Instead of a wooden palette, a plate-glass or stone slab is required for large masses, and a spatula of hard wood or horn.

"The surface to be painted on must be a solid dry coat of stucco ground with a mixture of such colours as will give a suitable tone of colour and depth. The first coat or ground is to be fixed by the *cauterium* with a moderate degree of fusion. The subject may be sketched on this ground with chalk or charcoal; and precise outlines, especially of minute forms, can be traced or sketched in with a metallic point or etching needle. The *cauterium* or salamander is not to be used again until the whole surface is covered and the effect advanced to a certain degree. It is clear that the manipulation of these materials, differing greatly from painting in oil, will succeed more readily in the hands of an artist who has had some practice in fresco or in distemper; and as the surface is in most cases perpendicular, some care is required to prevent the colour from running down.

"When this incision by the *cauterium* is finished, and the whole surface of the picture cooled, it may be polished by friction with cloth or hard cushions, covered with some more or less rough texture, or with some of the implements used in polishing wood."

Those who recommend in preference the solution of wax in spirit, and the addition of resins, do not profess to have discovered the precise process of the Greeks, but they have not failed to remark that the ancient writers speak of resins as entering into the ingredients of painting.

The credit of having suggested the present systems of wax-painting, which are adopted with various modifications at Paris and Munich, is generally attributed to Montabert, who, in the eighth volume of his comprehensive "*Traité complet de la Peinture*," extols this art above that of oil-painting. In consequence of the difficulty of reviving the study of fresco-painting in France, the attention of many artists and chemists has been turned to the employment of wax-painting, and various churches and public buildings in Paris have been already decorated in this mode. In Munich, also, considerable works are in progress, executed in a method analogous to that of Montabert.

The advantage of wax as a vehicle is its durability. A wall painted white, partly with wax and partly with oil, exhibits the same tint for some days, but by degrees the oil colour darkens, and after some months the two portions are quite distinct; that which was painted in wax retaining all its brilliancy.

To this advantage is opposed, besides the difficulty of manipulation, the dull effect of dark shadows in pictures executed in wax. This is owing to the semi-opaque nature of the material, and is unavoidable as long as the gloss of the surface is considered indispensable; but the colours become much more vivid after the surface is polished, and the admixture of resin tends to give clearness to the deeper shades.

Some of the French artists have gone farther; they have added a portion of oil to the cero-resinous medium, and by this means attain any degree of richness they please. In this last system the *mat* quality, or absence of gloss, is in a great measure abandoned, and the method is only to be considered a means of lessening the quantity of oil, and consequently of avoiding the danger of a horny and darkened surface.

Some German artists, again, have considered it essential that the resinous ingredient should predominate, and have recommended only a thirtieth part of wax, the rest consisting entirely of liquid resin (balsam).

Wax painting, properly so called, from its not admitting of much force (while its lights are assumed to be unchangeably bright), would suggest a particular style and choice of subjects; and as all colours (according to the French chemists) may be employed in it, it is considered to be particularly fitted for poetical subjects adapted to the lighter kinds of decoration. It is for such purposes that it has been chiefly employed in Munich.

The following is a description of the methods in general use at Paris and at Munich:—

\* Dureau (*Manuel du Peintre à la Cire*, Paris, 1844, p. 18) assumes, that the presence of alkalies, such as ammonia and salt of tartar, in the substance of paintings must be especially injurious.

\* Extract of a letter from Mr. John King, chemist, 30, Mall, Clifton, Bristol. Aug. 31, 1845.